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[Addendum to article in ~~the~~ #35
Microbiology Vol 8 #2 summer]

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In Volume 8, No. 2, Summer Issue of Archaeology, a brief article on excavations in caves in Tamaulipas, northeastern Mexico, was published. Included in the findings from the stratified caves was a long sequence of domesticated plants. Since that article was written, more of the domesticated plant remains have been studied^{and} Carbon 14 dates have been determined by Dr. Crane of the Randall Laboratories of the University of Michigan for all eight of the cultural phases. Both these studies have yielded rather surprising results, which I believe should be of interest to those who read the original report.

In the original article, the earliest culture I mentioned, on page 112, is here called the Infiernillo Phase. It has been dated by Carbon 14 as existing at 6,244 B.C. \pm 450 (M-498 from Level 6 of Cave Tm c 248), and 6,584 B.C. \pm 450 (M-500 from Level 12 of Cave Tm c 274).

Food remains show that these people obtained about 30 per cent of their food from hunting, 69 per cent from wild food plants (including a few small, possibly wild lima beans) and one per cent from gourd (seeds) *Lageneria* sic and squash, Cucurbita pepo. Thus these people were basically food-gatherers who had domesticated two plants which were of little importance in their subsistence. The second group, now called Ocampo, is dated as existing at 3,994 B.C. (\pm), 3,274 B.C. (\pm) and 2,634 B.C. (\pm), and the phase is estimated to have lasted from 2,300 to 4,000 B.C. In subsistence these people were plant collectors (80 per cent) who did some hunting (15 per cent) and a little (4 per cent) incipient agriculture or gardening of gourds, *Lageneria* sic , squash, Cucurbita pepo, and beans, Phaseous vulgaris. The third phase, called Flacco, dated as 1,990 B.C.,

and estimated as lasting from 2,300 to 1,400 B.C., has a similar subsistence: 75 per cent foodgathering, 10 per cent hunting, and about 15 per cent incipient agriculture of gourds, *Lagenaria sic*, squash, *Cucurbita pepo*, beans, *phaseolus vulgaris*, and primitive pod-popcorn, *Zea Mayo-Bat* Cave Race. The fourth cultural period, called Guerra, has a single date of about 2,700 B.C., which does not fit with the stratigraphy and may very well be contaminated. It is estimated that this culture existed between 1,400 to 1,800 B.C. This same period sees a major shift in subsistence as agriculture (30 per cent) was practised with some hunting (10 per cent) and still a great deal of food-gathering (60 per cent). The major part of their agricultural produce was Bat Cave corn but gourds, squash, and beans of the same varieties as in the previous horizons continued. The only new domesticated plants seem to have been cotton.

The fifth phase, Mesa de Guaje, from "a thick vegetable layer, with the first sherds, is dated as 1,484 B.C. (\pm) and 1,694 B.C. (\pm) and probably occurred from about 1,400 to 400 B.C. These people were true agriculturists (45 per cent) and used hybridized corn (*Zea Mayr* - a number of races) *teocentli*, gourds, *Cucurbita moschata* and *pepo*, *phaseolus lunatus* and *vulgaris*, cotton, and chili.

The phase above, called Palmillas, dated as 236 A.D. (\pm) may have lasted to about 900 A.D. Agriculture represented over 50 -er cent of their subsistence and hunting, 5 per cent. Besides all the previous plants, domesticated new races of corn and beans appear, as well as squash, *Cucurbita mixta*, and tobacco,

(Meotina ruatucana) ↓

naushe meotucana

anawakiths + meotucana

dated 1436 AD

The final two cultures, San Lorenzo, 400 or 1,100 A.D. to 1,450 A.D., and San Antonio, 1,450 to 1,750 A.D., add few new domesticated plants (possibly only new races of old species), and have about the same subsistence pattern.

Quite frankly, the dates of the appearance of these domesticated plants seem early but all but one are so consistent with the stratigraphy and with the cross-dating that they seem reasonable. Perhaps there was some sort of contamination of the carbon but, if so, it has not been determined. If these dates are correct, then domestication of plants in the New World, surprisingly enough, seems to have been equal in age to that of the Old World, though true agriculture and "civilizations" was much later. Certainly further investigation of this phenomena is warranted.

(Addendum to article in ~~the~~ ² ~~5~~ #95
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